JOURNAL OF BIOMEDICAL MATERIALS RESEARCH

Volume 49 Contents 2000

January 2000
Volume 49
Issue No. 1

1 Template Recognition of Protein-Imprinted Polymer Surfaces
H. Shi and B. D. Ratner

12 The Surface Stability of Polymers with Adsorbed Fibronectin
D. H. Carey

17 Morphogenetic Behavior of Periodontium on Inorganic Implant Materials: An Experimental Study of Canines
M. Urabe, R. Hosokawa, D. Chiba, Y. Sato, Y. Akagawa

25 The Role of Superoxide Ions in the Degradation of Synthetic Absorbable Sutures
K.-H. Lee, C. C. Chu

36 Matrix-Assisted Laser Desorption Ionization Mass Spectrometry Detection of Proteins Adsorbed *in vivo* onto Contact Lenses
P. Kingshott, H. A. W. St John, R. C. Chatelier, H. J. Griesser

43 Bone Growth on and Resorption of Calcium Phosphate Coatings Obtained by Pulsed Laser Deposition
L. Clèries, J. M. Fernández-Pradas, J. L. Morenza

53 Alteration of Organized Structure of Biofilm Formed by *Staphylococcus epidermidis* on Soft Contact Lenses
R. Perilli, M. L. Marziano, G. Formisano, S. Caiazza, G. Scorcia, L. Baldassarri

58 Determination of Apparent Thermodynamic Parameters for Adsorption of a Midchain Peptidyl Residue onto a Glass Surface
R. A. Latour, Jr., S. D. Trembley, Y. Tian, G. C. Lickfield, A. P. Wheeler

66 Peptide Modified Gold-Coated Polyurethanes as Thrombin Scavenging Surfaces
X. Sun, H. Sheardown, P. Tengvall, J. L. Brash

79 Expression of Cell Adhesion Complexes in Epithelial Cells Seeded on Biomaterial Surfaces
L. Räisänen, M. Könönen, J. Juhanoja, P. Varpavaara, J. Hautaniemi, J. Kivilahti, M. Hormia

88 Effects of Sterilization Processes on NiTi Alloy: Surface Characterization
B. Thierry, M. Tabrizian, O. Savadogo, L'H. Yahia

99 Studies on the Mechanisms of Turmorigenesis Induced by Polyetherurethane in Rats: Production of Superoxide, Tumor Necrosis Factor, and Interleukin 1 from Macrophages Cultured on Different Polyetherurethanes
R. Nakaoka, T. Tsuchiya, A. Nakamura

106 Ultrastructure of the Interface Between Alumina Bead Composite and Bone
Y. Okada, M. Kobayashi, M. Neo, S. Shinzato, M. Matsushita, T. Kokubo, T. Nakamura

112 Mechanisms of Heparin Transport Through Expanded Poly(tetrafluoroethylene) Vascular Grafts
I. Noh, M. A. Lovich, E. R. Edelman

120 Detection of Collagen Synthesis by Human Osteoblasts on a Tricalcium Phosphate Hydroxyapatite: An X-ray Photoelectron Spectroscopy Investigation
G. Zambonin, I. Losito, J. T. Triffitt, C. G. Zambonin

127 The Effect of a Silane Coupling Agent on the Bond Strength of Bone Cement and Cobalt-Chrome Alloy
S. A. Yerby, A. F. Paal, P. M. Young, G. S. Beaupré, K. L. Ohashi, S. B. Goodman

134 Effect of Chemical Treatments on Tendon Cellularity and Mechanical Properties
J. S. Cartmell, M. G. Dunn

141 Surface Chemistry Control of Monocyte and Macrophage Adhesion, Morphology, and Fusion
T. O. Collier, C. H. Thomas, J. M. Anderson, K. E. Healy

February 2000
Volume 49
Issue No. 2

147 Wear Simulation of UHMWPE for Total Hip Replacement with a Multidirectional Motion Pin-on-Disk Device: Effects of Counterface Material, Contact Area, and Lubricant
V. Saikko, T. Ahlroos

155 Qualitative and Quantitative Study of Human Osteoblast Adhesion on Materials with Various Surface Roughnesses
K. Anselme, M. Bigerelle, B. Noel, E. Dufresne, D. Judas, A. Iost, P. Hardouin

167 Corrosion of and Changes in Biological Effects of Cobalt Chrome Alloy and 316L Stainless Steel Prosthetic Particles with Age
D. R. Haynes, T. N. Crotti, M. R. Haywood

176 Dissolution of Dense Carbonate Apatite Subcutaneously Implanted in Wistar Rats
J. Barralet, M. Akao, H. Aoki, H. Aoki

183 *In Vitro* Growth and Activity of Primary Chondrocytes on a Resorbable Polylactide Three-Dimensional Scaffold
Z. Gugala, S. Gogolewski

192 Striated Muscle Microvascular Response to Silver Implants: A Comparative *In Vivo* Study with Titanium and Stainless Steel
C. N. Kraft, M. Hansis, S. Arens, M. D. Menger, B. Vollmar

200 Protein Adsorption and Cell Attachment to Patterned Surfaces
C. D. McFarland, C. H. Thomas, C. DeFilippis, J. G. Steele, K. E. Healy

211 X-ray and Neutron Diffraction Studies of Crystallinity in Hydroxyapatite Coatings
E. Girardin, P. Millet, A. Lodini

216 Mechanism and Rate of Degradation of Polyhydroxyoctanoate Films in Aqueous Media: A Long-Term *In Vitro* Study
Y. Marois, Z. Zhang, M. Vert, X. Deng, R. Lenz, R. Guidoin

225 Local Hemostatic Effects of Microcrystalline Partially Deacetylated Chitin Hydrochloride
T. Sugamori, H. Iwase, M. Maeda, Y. Inoue, H. Kurosawa

233 Effect of External Stresses on Calcium Phosphate Glass Investigated by IR Spectroscopy
Y.-K. Lee, K.-N. Kim, S.-Y. Choi

238 Metal Ion Release from Titanium with Active Oxygen Species Generated by Rat Macrophages *In Vitro*
Y. Mu, T. Kobayashi, M. Sumita, A. Yamamoto, T. Hanawa

244 X-ray Determination of Crystalline Hydroxyapatite to Amorphous Calcium-Phosphate Ratio in Plasma Sprayed Coatings
L. Keller, W. A. Dollase

250 Adherence of *Streptococcus mutans* to an E-glass Fiber-reinforced Composite and Conventional Restorative Materials Used in Prosthetic Dentistry
J. Tanner, P. K. Vallittu, E. Söderling

257 Biocompatibility and Effect on Osteogenesis of Poly(ortho ester) Compared to Poly(DL-lactic Acid)
E. Solheim, B. Sudmann, G. Bang, E. Sudmann

264 *In Vitro* Transformation of Bioactive Glass Granules into Ca-P Shells
S. Radin, P. Ducheyne, S. Falaize, A. Hammond

273 Evaluation of Bioactive Bone Cement in Canine Total Hip Arthroplasty
H. Fujita, K. Ido, Y. Matsuda, H. Iida, M. Oka, Y. Kitamura, T. Nakamura

289 Photocrosslinkable Chitosan as a Biological Adhesive
K. Ono, Y. Saito, H. Yura, K. Ishikawa, A. Kurita, T. Akaike, M. Ishihara

March 5, 2000
Volume 49
Issue No. 3

297 Systemic Anti-IFN-γ Treatment and Role of Macrophage Subsets in the Foreign Body Reaction to Dermal Sheep Collagen in Rats
I. M. S. L. Khouw, P. B. van Wachem, R. J. van der Worp, T. K. van den Berg, L. F. M. H. de Leij, and M. J. A. van Luyn

305 Matrix-Mixed Culture: New Methodology for Chondrocyte Culture and Preparation of Cartilage Transplants
C. Perka, R.-S. Spitzer, K. Lindenhayn, M. Sittinger, and O. Schultz

312 Use of Bone-Bonding Hydrogel Copolymers in Bone: An *In Vitro* and *In Vivo* Study of Expanding PEO-PBT Copolymers in Goat Femora
R. J. B. Sakkers, R. A. J. Dalmeyer, J. R. de Wijn, and C. A. van Blitterswijk

319 Alumina Powder/Bis-GMA Composite: Effect of Filler Content on Mechanical Properties and Osteoconductivity
M. Kobayashi, S. Shinzato, K. Kawanabe, M. Neo, M. Matsushita, T. Kokubo, T. Kikutani, and T. Nakamura

328 Autologous Bone Marrow Stromal Cells Loaded onto Porous Hydroxyapatite Ceramic Accelerate Bone Repair in Critical-Size Defects of Sheep Long Bones
E. Kon, A. Muraglia, A. Corsi, P. Bianco, M. Marcacci, I. Martin, A. Boyde, I. Ruspantini, P. Chistolini, M. Rocca, R. Giardino, R. Cancedda, and R. Quarto

338 Citric Acid Etching of Cervical Sclerotic Dentin Lesions: An AFM Study
G. W. Marshall, Jr., Y. J. Chang, K. Saeki, S. A. Gansky, and S. J. Marshall

345 Calcium Phosphate Deposition on Titanium Surfaces in the Presence of Fibronectin
A. P. V. A. do Serro, A. C. Fernandes, and B. de Jesus Vieira Saramago

353 Systemic Metal–Protein Binding Associated with Total Joint Replacement Arthroplasty
N. J. Hallab, J. J. Jacobs, A. Skipor, J. Black, K. Mikecz, and J. O. Galante

362 Relationships Among Cell Attachment, Spreading, Cytoskeletal Organization, and Migration Rate for Anchorage-Dependent Cells on Model Surfaces
K. Webb, V. Hlady, and P. A. Tresco

369 Fluorine Ion-Implanted Polystyrene Improves Growth and Viability of Vascular Smooth Muscle Cells in Culture
L. Bačáková, V. Mareš, M. G. Bottone, C. Pellicciari, V. Lisá, and V. Švorčík

380 Fracture Toughness is Dependent on Bone Location—A Study of the Femoral Neck, Femoral Shaft, and the Tibial Shaft
C. U. Brown, Y. N. Yeni, and T. L. Norman

390 Gd^{3+}-Loaded Polyion Complex for pH Depiction with Magnetic Resonance Imaging
M. Mikawa, N. Miwa, M. Bräutigam, T. Akaike, and A. Maruyama

396 Endothelial Cell Expression of Monocyte Chemotactic Protein-1, Tissue Factor, and Thrombomodulin on Hydrophilic Plasma Polymers
G. Murugesan, M. R. S. Rani, R. M. Ransohoff, R. E. Marchant, and K. Kottke-Marchant

409 Adsorption of Plasminogen from Human Plasma to Lysine-Containing Surfaces
W. G. McClung, D. L. Clapper, S.-P. Hu, and J. L. Brash

415 Adsorption and Release of Insulin-Like Growth Factor-I on Porous Tricalcium Phosphate Implant
P. Laffargue, P. Fialdes, P. Frayssinet, M. Rtaimate, H. F. Hildebrand, and X. Marchandise

March 15, 2000
Volume 49
Issue No. 4

423 *In Vitro* Bone Formation on a Bone-Like Apatite Layer Prepared by a Biomimetic Process on a Bioactive Glass-Ceramic
C. Loty, J.-M. Sautier, H. Boulekbache, T. Kokubo, H.-M. Kim, and N. Forest

435 Adsorbed Serum Proteins Responsible for Surface Dependent Human Macrophage Behavior
C. R. Jenney and J. M. Anderson

448 Mouse Fibroblasts in Long-Term Culture within Collagen Three-Dimensional Scaffolds: Influence of Crosslinking with Diphenylphosphorylazide on Matrix Reorganization, Growth, and Biosynthetic and Proteolytic Activities
B. Chevallay, N. Abdul-Malak, and D. Herbage

460 Assessing Acute Platelet Adhesion on Opaque Metallic and Polymeric Biomaterials with Fiber Optic Microscopy
R. D. Schaub, M. V. Kameneva, H. S. Borovetz, and W. R. Wagner

469 Macrophage Cytokine Response to Particles and Lipopolysaccharide *In Vitro*
A. U. Daniels, F. H. Barnes, S. J. Charlebois, and R. A. Smith

479 Elastic and Physicochemical Relationships within Cortical Bone
S. S. Kohles and D. A. Martinez

489 Cellular Proliferation and Macrophage Populations Associated with Implanted Expanded Polytetrafluoroethylene and Polyethyleneterephthalate
R. D. Hagerty, D. L. Salzmann, L. B. Kleinert, and S. K. Williams

498 Use of α-Tricalcium Phosphate (TCP) as Powders and as an Aqueous Dispersion to Modify Processing, Microstructure, and Mechanical Properties of Polymethylmethacrylate (PMMA) Bone Cements and to Produce Bone-Substitute Compounds
D. T. Beruto, S. A. Mezzasalma, M. Capurro, R. Botter, and P. Cirillo

506 Use of Recombinant Human Osteogenic Protein-1 for the Repair of Subchondral Defects in Articular Cartilage in Goats
R. T. Louwerse, I. C. Heyligers, J. Klein-Nulend, S. Sugihara, G. P. J. van Kampen, C. M. Semeins, S. W. Goei, M. H. M. T. de Koning, P. I. J. M. Wuisman, and E. H. Burger

517 Synthesis and Characterization of Dextran-Methacrylate Hydrogels and Structural Study by SEM
S.-H. Kim and C.-C. Chu

528 Reconstruction of Rat Peripheral Nerve Gap without Sutures Using Freeze-Dried Alginate Gel
K. Suzuki, Y. Suzuki, M. Tanihara, K. Ohnishi, T. Hashimoto, K. Endo, and Y. Nishimura

534 GAG-Augmented Polysaccharide Hydrogel: A Novel Biocompatible and Biodegradable Material to Support Chondrogenesis
V. F. Sechriest, Y. J. Miao, C. Niyibizi, A. Westerhausen-Larson, H. W. Matthew, C. H. Evans, F. H. Fu, and J.-K. Suh

JOURNAL OF BIOMEDICAL MATERIALS RESEARCH

Volume 50 Contents 2000

April 2000
Volume 50
Issue No. 1

1 Crystal Polymer Interaction with New Injectable Bone Substitute; SEM and Hr TEM Study
G. Daculsi, R. Rohanizadeh, P. Weiss, and J. M. Bouler

8 Press-Formable $CaO–MgO–SiO_2–TiO_2–Ag_2O$ Glass as a Biomaterial
T. Nonami and S. Tsutsumi

16 Apatite Formation on Organic Monolayers in Simulated Body Environment
K. Sato, Y. Kumagai, and J. Tanaka

21 Sister Chromatid Exchanges and Ion Release in Patients Wearing Fracture Fixation Devices
L. Savarino, S. Stea, D. Granchi, M. Visentin, G. Ciapetti, M. E. Donati, G. Rollo, G. Zinghi, A. Pizzoferrato, L. Montanaro, and A. Toni

27 Production of Porous Hydroxyapatite by the Gel-Casting of Foams and Cytotoxic Evaluation
P. Sepulveda, J. G. P. Binner, S. O. Rogero, O. Z. Higa, and J. C. Bressiani

35 Bioactive Tantalum Metal Prepared by NaOH Treatment
T. Miyazaki, H.-M. Kim, F. Miyaji, T. Kokubo, H. Kato, and T. Nakamura

43 Proinflammatory Cytokine Expression of IL-1β and TNF-α by Human Osteoblast-Like MG-63 Cells Upon Exposure to Silicon Nitride *In Vitro*
A. Sohrabi, C. Holland, R. Kue, D. Nagle, C. G. Frondoza, and D. S. Hungerford

50 Growth of Continuous Bonelike Mineral within Porous Poly(Lactide-*co*-Glycolide) Scaffolds *In Vitro*
W. L. Murphy, D. H. Kohn, and D. J. Mooney

59 Particulate Retrieval of Hydrolytically Degraded Poly(Lactide-*co*-Glycolide) Polymers
F. W. Cordewener, L. C. Dijkgraaf, J. L. Ong, C. M. Agrawal, G. Zardeneta, S. B. Milam, and J. P. Schmitz

67 Transforming Growth Factor-β1 Incorporated During Setting in Calcium Phosphate Cement Stimulates Bone Cell Differentiation *In Vitro*
E. J. Blom, J. Klein-Nulend, C. P. A. T. Klein, K. Kurashina, M. A. J. van Waas, and E. H. Burger

75 Ligand Accessibility as Means to Control Cell Response to Bioactive Bilayer Membranes
Y. Dori, H. Bianco-Peled, S. K. Satija, G. B. Fields, J. B. McCarthy, and M. Tirrell

82 Rapid Cell Sheet Detachment from Poly(*N*-isopropylacrylamide)-Grafted Porous Cell Culture Membranes
O. H. Kwon, A. Kikuchi, M. Yamato, Y. Sakurai, and T. Okano

90 Technical Note: Quantification of the Surface Density of a Fluorescent Label with the Optical Microscope
M. A. Model and K. E. Healy

May 2000
Volume 50
Issue No. 2

97 Analysis of Apatite Layers on Glass–Ceramic Particulate Using FTIR and FT-Raman Spectroscopy
I. Rehman, M. Karsh, L. L. Hench, and W. Bonfield

101 Hyaluronan-Based Biopolymers as Delivery Vehicles for Bone-Marrow-Derived Mesenchymal Progenitors
M. Radice, P. Brun, R. Cortivo, R. Scapinelli, C. Battaliard, and G. Abatangelo

110 Adsorption of Human IgG on Cu^{2+}-Immobilized Cellulose Affinity Membrane: Preliminary Study
P. R. Hari, W. Paul, and C. P. Sharma

114 Quantitative Evaluation of Cell Attachment to Glass, Polystyrene, and Fibronectin- or Collagen-Coated Polystyrene by Measurement of Cell Adhesive Shear Force and Cell Detachment Energy
A. Yamamoto, S. Mishima, N. Maruyama, and M. Sumita

125 Osseointegration of Composite Calcium Phosphate Bioceramics
P. Frayssinet, D. Mathon, A. Lerch, A. Autefage, P. Collard, and N. Rouquet

131 Ion Chromatographic Determination of Metals in Biocompatibility Testing
P. L. Buldini, A. Mevoli, and J. L. Sharma

138 Human Chondrocyte Proliferation and Matrix Synthesis Cultured in Atelocollagen® Gel
Y. Uchio, M. Ochi, M. Matsusaki, H. Kurioka, and K. Katsube

144 Heparin-Carrying Polystyrene to Mediate Cellular Attachment and Growth via Interaction with Growth Factors
M. Ishihara, Y. Saito, H. Yura, K. Ono, K. Ishikawa, H. Hattori, T. Akaike, and A. Kurita

153 Use of Glass Slides Coated with Apatite–Collagen Complexes for Measurement of Osteoclastic Resorption Activity
T. Shibutani, H. Iwanaga, K. Imai, M. Kitago, Y. Doi, and Y. Iwayama

160 Plasma-Deposited Membranes for Controlled Release of Antibiotic to Prevent Bacterial Adhesion and Biofilm Formation
S. K. Hendricks, C. Kwok, M. Shen, T. A. Horbett, B. D. Ratner, and J. D. Bryers

171 *In Situ* Gelation of PEG-PLGA-PEG Triblock Copolymer Aqueous Solutions and Degradation Thereof
B. Jeong, Y. H. Bae, and S. W. Kim

178 Preparation, Solubility, and Cytocompatibility of Zinc-Releasing Calcium Phosphate Ceramics
A. Ito, K. Ojima, H. Naito, N. Ichinose, and T. Tateishi

184 Stimulatory Effect of Zinc-Releasing Calcium Phosphate Implant on Bone Formation in Rabbit Femora
H. Kawamura, A. Ito, S. Miyakawa, P. Layrolle, K. Ojima, N. Ichinose, and T. Tateishi

191 Restoration of Segmental Bone Defects in Rabbit Radius by Biodegradable Capsules Containing Recombinant Human Bone Morphogenetic Protein-2
M. Mori, M. Isobe, Y. Yamazaki, K. Ishihara, and N. Nakabayashi

199 High-Resolution Electron Microscopy Study of Synthetic Carbonate and Aluminum Containing Apatites
J. D. Layani, F. J. G. Cuisinier, P. Steuer, H. Cohen, J.-C. Voegel, and I. Mayer

208 Initial Adhesion and Surface Growth of *Staphylococcus Epidermidis* and *Pseudomonas Aeruginosa* on Biomedical Polymers
B. Gottenbos, H. C. van der Mei, and H. J. Busscher

215 Neural and Connective Tissue Response to Long-Term Implantation of Multiple Contact Nerve Cuff Electrodes
W. M. Grill and J. T. Mortimer

227 Implantation of Recombinant Human Bone Morphogenetic Proteins with Biomaterial Carriers: A Correlation Between Protein Pharmacokinetics and Osteoinduction in the Rat Ectopic Model
H. Uludag, D. D'Augusta, J. Golden, J. Li, G. Timony, R. Riedel, and J. M. Wozney

239 The Study of Surface Transformation of Pulsed Laser Deposited Hydroxyapatite Coatings
H. Zeng and W. R. Lacefield

248 Structural and Morphological Study of Pulsed Laser Deposited Calcium Phosphate Bioceramic Coatings: Influence of Deposition Conditions, Laser Parameters, and Target Properties
H. Zeng, W. R. Lacefield, and S. Mirov

259 Foreign-Body Reaction to Dermal Sheep Collagen in Interferon-γ-Receptor Knock-Out Mice
I. M. S. L. Khouw, P. B. van Wachem, J. A. Plantinga, B. L. Haagmans, L. F. M. H. de Leij, and M. J. A. van Luyn

267 *In Vitro* Stability of Plasma-Sprayed Hydroxyapatite Coatings on Ti-6A1-4V Implants Under Cyclic Loading
C. Zhang, Y. Leng, and X. Zhang

276 Technical Note: Processing Cell-Seeded Polyester Scaffolds for Histology
C. E. Holy and R. Yakubovich

280 Erratum

June 5, 2000
Volume 50
Issue No. 3

281 Adsorbed IgG: A Potent Adhesive Substrate for Human Macrophages
C. R. Jenney and J. M. Anderson

291 Leukocyte Adhesion on Model Surfaces Under Flow: Effects of Surface Chemistry, Protein Adsorption, and Shear Rate
V. A. Tegoulia and S. L. Cooper

302 Surfactant Polymers Designed to Suppress Bacterial (*Staphylococcus Epidermidis*) Adhesion on Biomaterials
K. Vacheethasanee and R. E. Marchant

313 Swelling and Delamination of Multi-Electrode Sensor Arrays Studied by Variable-Pressure Scanning Electron Microscopy
P. Lemoine, P. Mailley, M. Hyland, J. M. McLaughlin, E. McAdams, J. Anderson, A. Lynch, D. Diamond, and M. Leader

322 Third-Body Wear of Cobalt-Chromium-Molybdenum Implant Alloys Initiated by Bone and Poly(methyl methacrylate) Particles
L. Que and L. D. T. Topoleski

331 Polymer Latexes for Cell-Resistant and Cell-Interactive Surfaces
P. Banerjee, D. J. Irvine, A. M. Mayes, and L. G. Griffith

340 Immobilization of PEO-PPO-PEO Triblock Copolymers on PTFE-Like Fluorocarbon Surfaces
M. Nitschke, A. Menning, and C. Werner

344 Preparation and Characterization of Apatite Deposited on Silk Fabric Using an Alternate Soaking Process
T. Furuzono, T. Taguchi, A. Kishida, M. Akashi, and Y. Tamada

353 Behavior of Human Osteoblastic Cells on Stoichiometric Hydroxyapatite and Type A Carbonate Apatite: Role of Surface Energy
S. A. Redey, M. Nardin, D. Bernache-Assolant, C. Rey, P. Delannoy, L. Sedel, and P. J. Marie

365 Characterization of the Inflammatory Response to Biomaterials Using a Rodent Air Pouch Model
K. A. Hooper, T. L. Nickolas, E. J. Yurkow, J. Kohn, and D. L. Laskin

375 Surface Contact Fatigue and Flexural Fatigue of Dental Restorative Materials
J. F. McCabe, Y. Wang, and M. J. A. Braem

381 Enhanced Wear Performance of Highly Crosslinked UHMWPE for Artificial Joints
R. Chiesa, M. C. Tanzi, S. Alfonsi, L. Paracchini, M. Moscatelli, and A. Cigada

388 Characterization of a Polymeric PLGA-Injectable Implant Delivery System for the Controlled Release of Proteins
R. E. Eliaz and J. Kost

397 *In Vivo* Biocompatibility of Dextran-Based Hydrogels
J. A. Cadée, M. J. A. van Luyn, L. A. Brouwer, J. A. Plantinga, P. B. van Wachem, C. J. de Groot, W. den Otter, and W. E. Hennink

405 Alginate Hydrogel Linked with Synthetic Oligopeptide Derived from BMP-2 Allows Ectopic Osteoinduction *In Vivo*
Y. Suzuki, M. Tanihara, K. Suzuki, A. Saitou, W. Sufan, and Y. Nishimura

410 Histomorphometric Study on High-Strength Hydroxyapatite/Poly(L-lactide) Composite Rods for Internal Fixation of Bone Fractures
T. Furukawa, Y. Matsusue, T. Yasunaga, Y. Nakagawa, Y. Okada, Y. Shikinami, M. Okuno, and T. Nakamura

420 Studies on Small (<350 μm) Alginate-Poly-L-Lysine Microcapsules. V. Determination of Carbohydrate and Protein Permeation Through Microcapsules by Reverse-Size Exclusion Chromatography
R. Robitaille, F. A. Leblond, Y. Bourgeois, N. Henley, M. Loignon, and J.-P. Hallé

428 Modulating Fibroblast Adhesion, Spreading, and Proliferation Using Self-Assembled Monolayer Films of Alkylthiolates on Gold
K. B. McClary, T. Ugarova, and D. W. Grainger

440 Controlled Release of Transforming Growth Factor β1 from Biodegradable Polymer Microparticles
L. Lu, G. N. Stamatas, and A. G. Mikos

452 Effects of Transforming Growth Factor β1 Released from Biodegradable Polymer Microparticles on Marrow Stromal Osteoblasts Cultured on Poly(propylene fumarate) Substrates
S. J. Peter, L. Lu, D. J. Kim, G. N. Stamatas, M. J. Miller, M. J. Yaszemski, and A. G. Mikos

463 Letter to the Editor
H. J. Busscher and W. Norde

June 15, 2000
Volume 50
Issue No. 4

465 Patterned Poly(chlorotrifluoroethylene) Guides Primary Nerve Cell Adhesion and Neurite Outgrowth
S. Saneinejad and M. S. Shoichet

475 Effect of Porosity and Surface Hydrophilicity on Migration of Epithelial Tissue Over Synthetic Polymer
J. G. Steele, G. Johnson, K. M. McLean, G. J. Beumer, and H. J. Griesser

483 Cytokine Expression *In Vitro* by Cultured Human Endothelial Cells in Contact with Polyethylene Terephthalate Coated with Pyrolytic Carbon and Collagen
E. Cenni, D. Granchi, G. Ciapetti, L. Savarino, A. Corradini, and A. Di Leo

490 Human Monocyte Adhesion and Activation on Crystalline Polymers with Different Morphology and Wettability *In Vitro*
T.-H. Young, D.-T. Lin, and L.-Y. Chen

499 A Comparison of the Surface Characteristics and Ion Release of Ti6A14V and Heat-Treated Ti6A14V
T. M. Lee, E. Chang, and C. Y. Yang

512 Surface Modification of Poly(ethylene-co-vinyl alcohol) (EVA). Part I. Introduction of Carboxyl Groups and Immobilization of Collagen
K. Matsumura, S.-H. Hyon, N. Nakajima, C. Peng, and S. Tsutsumi

518 Formation of Calcium Phosphate/Collagen Composites Through Mineralization of Collagen Matrix
C. Du, F. Z. Cui, W. Zhang, Q. L. Feng, X. D. Zhu, and K. de Groot

528 Regulation of Biodegradability and Drug Release Behavior of Aliphatic Polyesters by Blending
Y. Shen, W. Sun, K. J. Zhu, and Z. Shen

536 Physical, Chemical, and Biological Characterization of Pulsed Laser Deposited and Plasma Sputtered Hydroxyapatite Thin Films on Titanium Alloy
W. J. Lo, D. M. Grant, M. D. Ball, B. S. Welsh, S. M. Howdle, E. N. Antonov, V. N. Bagratashvili, and V. K. Popov

546 Subcutaneous Abscess Formation Around Catheters Induced by Viable and Nonviable *Staphylococcus Epidermidis* as well as by Small Amounts of Bacterial Cell Wall Components
J. J. Boelens, S. A. J. Zaat, J. Meeldijk, and J. Dankert

557 Surface Modification of Poly(lactic acid) Nanospheres Using Hydrophobically Modified Dextrans as Stabilizers in an O/W Emulsion/Evaporation Technique
C. Rouzes, R. Gref, M. Léonard, A. De Sousa Delgado, and E. Dellacherie

566 A Viscous Bioerodible Poly(ortho ester) as a New Biomaterial for Intraocular Application
S. Einmahl, F. Behar-Cohen, C. Tabatabay, M. Savoldelli, F. D'Hermies, D. Chauvaud, J. Heller, and R. Gurny

574 Synthesis and Characterization of Polypyrrole-Hyaluronic Acid Composite Biomaterials for Tissue Engineering Applications
J. H. Collier, J. P. Camp, T. W. Hudson, and C. E. Schmidt

585 Two Different Types of Nonthrombogenic Surfaces: PEG Suppresses Platelet Adhesion ATP-Independently but HEMA-St Block Copolymer Requires ATP Consumption of Platelets to Prevent Adhesion
K. Uchida, M. Yamato, E. Ito, O. H. Kwon, A. Kikuchi, K. Sakai, and T. Okano

591 Cytoplasmic Delivery of a Macromolecular Fluorescent Probe by Poly(*d,l*-lactic-co-glycolic acid) Microspheres
K. D. Newman, G. S. Kwon, G. G. Miller, V. Chlumecky, and J. Samuel

598 An Investigation of Fibroblast Mitochondria Enzyme Activity and Respiration in Response to Metallic Ions Released from Dental Alloys
R. L. W. Messer, J. E. Doeller, D. W. Kraus, and L. C. Lucas

605 Initial Stability of a New Hybrid Fixation Hip Stem: Experimental Measurement of Implant-Bone Micromotion Under Torsional Load in Comparison with Cemented and Cementless Stems
M. Baleani, L. Cristofolini, and A. Toni

617 Author Index to Volume 49

622 Author Index to Volume 50

627 Subject Index to Volume 49

629 Subject Index to Volume 50

I Volume 49 Contents

V Volume 50 Contents